

**REMARKS**

Claims 1-37 remain pending, with claims 18-37 under current examination and claims 1-17 withdrawn from further consideration as drawn to a nonelected invention.

**Regarding the Final Office Action:**

In the Final Office Action, the Examiner rejected claims 18-21, 23, 25-28, 30, and 32-34 under 35 U.S.C. § 103(a) as unpatentable over Nishimura, et al. (U.S. Patent No. 6,332,835) ("Nishimura") in view of Hattori, et al. (EP 1 123 956 A1) ("Hattori") and Hudson (U.S. Patent No. 6,407,000) ("Hudson"); and objected to claims 22, 24, 29, 31 and 35-37 as being dependent upon a rejected base claim, but indicated they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Regarding the Telephonic Interview on October 22, 2004:**

Applicants thank the Examiner for his time and courtesy in granting an interview after a Final Rejection.

During the interview, the Examiner pointed to Nishimura, col. 8, lines 13-16, for support of his position that Nishimura's teaching of primary particle diameter between about 1 and 300 nm, and secondary particle diameter between about 3 and 1000 nm, overlaps Applicants' claimed "first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm" (claims 18 and 23). The Examiner was unwilling to concede any deficiency in Nishimura other than that already admitted in the Final Office Action, namely, "Nishimura et al. do not teach that the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles" (Final Office Action, pp. 3 and 6). Further, the Examiner said that because Nishimura's particles

are in a CMP slurry, they are therefore the same as the claimed “colloidal silica particles.”

Applicants nevertheless dispute this characterization.

The Examiner then asserted that he applied Hattori, par. [0006] and [0112], to teach the claimed weight ratio lacking in Nishimura. Further, the Examiner indicated he only applied Hudson “to reinforce Hattori.” The Examiner directed Applicants’ attention to Hattori’s par. [0006] and [0112] to provide support for his argument of motivation to combine Hattori with Nishimura for the purposes of achieving the claimed combination quoted above.

The Examiner then explicitly pointed out that the inclusion of “*third* particles formed a material *different* from those of the first and second colloidal silica particles” (Final Office Action, p. 5) was novel and would be patentable if Applicants’ choose to make amendments to objected-to claims 22, 24, 29, 31, and 35-37, as indicated on p. 5 of the Final Office Action. The Examiner repeated that he was willing to allow the present application after consideration of an Amendment after Final that addresses the allowable subject matter of these objected-to claims.

After consideration of the Examiner’s arguments in the Final Office Action and during the interview, however, Applicants maintain their traversal of the rejection for the following reasons.<sup>1</sup>

**Rejection of Claims 18-21, 23, 25-28, 30, and 32-34 under 35 U.S.C. § 103(a):**

Applicants traverse the rejection of claims 18-21, 23, 25-28, 30, and 32-34 under 35 U.S.C. § 103(a) because a *prima facie* case of obviousness has not been established based on Nishimura, Hattori, and Hudson. Applicants respectfully disagree with the Examiner’s arguments and conclusions. A *prima facie* case of obviousness has not been established.

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<sup>1</sup> The Office Action contains statements characterizing the related art and the claims. Regardless of whether any such statements are specifically identified herein, Applicants decline to automatically subscribe to any statements in the Office Action.

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).” M.P.E.P. § 2142, 8th Ed., Rev. 2 (May 2004), p. 2100-128.

At least the first requirement for establishing a *prima facie* case of obviousness has not been established, because Nishimura, Hattori, and Hudson, taken separately or in combination, fail to teach or suggest all the elements of Applicants’ claimed invention.

Applicants’ independent claims 18 and 23 each recite, in part,

...a slurry for chemical mechanical polishing, which contains polishing particles comprising first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm, wherein the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles...

The Examiner has already conceded twice on the record (Final Office Action and Examiner Interview) that Nishimura does not teach or suggest “the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles” (Final Office Action, p. 3). Applicants agree with the Examiner’s admission.

The Examiner then cited Hattori, however, to allegedly cure Nishimura’s deficiencies pertaining to independent claims 18 and 23, alleging during the interview, for example, that he applied Hattori, par. [0006] and [0112], to teach the claimed weight ratio lacking in Nishimura. Further, the Examiner indicated he only applied Hudson “to reinforce Hattori.”

To begin Applicants' remarks on the rejection, the record has clearly established at least one of Nishimura's deficiencies. That is, Nishimura fails to teach or suggest at least Applicants' claimed "weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles" (claims 18 and 23). The Examiner's application of Hattori and Hudson, then, is to allegedly cure this deficiency. Upon close examination of Hattori and Hudson, however, Applicants dispute the Examiner's characterization of these references, dispute their combinability with Nishimura, and submit that they do not teach or suggest that which is lacking in Nishimura.

Turning to Hattori, the citations provided by the Examiner in both the Final Office Action (paragraphs [0006], [0008], [0027], [0029], [0034], [0056], and [0112]) and interview (paragraphs [0006] and [0112]) do *not* teach or suggest Applicants' claimed weight ratio quoted above. For example, the Examiner pointed to Hattori's paragraph [0056], which teaches "adjusting the composition and pH of the aqueous dispersion to produce an aqueous dispersion for CMP having the desired polishing performance." This clearly does not establish any teaching or suggestion of the specifically claimed weight ratio. Moreover, the Examiner pointed to Hattori's paragraph [0034], which teaches that the "content of the colloidal silica according to the invention maybe 0.05-20 wt%, preferably 0.1-15 wt% and more preferably 0.1-10 wt% *with respect to the total amount of the aqueous dispersion*" (emphasis added). Similarly, Hattori's paragraph [0051] teaches that the "base contents for the aqueous dispersions of the invention may be up to 10 wt%, and preferably from 0.01 to 8 wt%, more preferably from 1 to 8 wt% *with respect to the total of the aqueous dispersion*" (emphasis added). Applicants note that Hattori is clearly referring to the weight ratio of the *total* colloidal silica content to the *total of the aqueous dispersion*, which is very different from the claimed "weight ratio of the first colloidal silica

particles is in the range of 0.6 to 0.9 *based on a total weight of said first and second colloidal silica particles*" (claims 18 and 23, emphasis added).

Turning to Hudson, the citations provided by the Examiner in the Final Office Action (col. 7, lines 10-15 and Fig. 4) "to reinforce Hattori" (Examiner Interview) do *not* teach or suggest Applicants' claimed weight ratio quoted above. For example, the Examiner pointed to Hudson's Fig. 4 to allegedly show that the bar graph illustrates a weight ratio of first colloidal silica particles 290 to second colloidal silica particles 280 such that "the ratio of 290 to 280 is within the range of 0.6~0.9" (Final Office Action, p. 4).

In response, Applicants first point out that the Examiner's characterization of Hudson is incorrect. First, the Examiner's own interpretation of Hudson's Fig. 4 is to apply the ratio of first colloidal silica particles *to the second colloidal silica particles*. This is not the same as Applicants' claimed weight ratio "of 0.6 to 0.9 *based on a total weight of said first and second colloidal silica particles*" (emphasis added). Second, the Examiner has misinterpreted the data illustrated in the bar graph in Hudson's Fig. 4. Hudson's disclosure clearly describes what is shown in Fig. 4:

FIG. 4 is a bar graph *illustrating a bi-modal particle size distribution* of the planarizing slurry 242 having a first particle *size distribution* 280 from approximately 0.20-1.0  $\mu\text{m}$  of the larger first abrasive particles 216 (FIG. 2) and a second particle *size distribution* 290 from approximately 0.020-0.20  $\mu\text{m}$  of the smaller second abrasive particles 226 (FIG. 2). The *first particle size distribution* 280 *has a first mode* 282 identifying that a significant percentage of the first abrasive particles 216 have particle sizes of approximately 0.3-0.4  $\mu\text{m}$ . The *second particle size distribution* 290 *has a second mode* 292 identifying that a significant percentage of the second abrasive particles 226 have particle sizes of approximately 0.07-0.14  $\mu\text{m}$  (emphasis added).

It is clear that Hudson's Fig. 4 is showing modal distribution based on particle *size* (as indicated by the abscissa on the graph). Hudson's Fig. 4 does not teach or suggest anything

about modal distribution of particle *weight*. Therefore, the Examiner cannot infer anything about Applicants' claimed weight ratio from the data in Hudson's Fig. 4, which illustrates only a distribution of particle *size*. Thus, the Examiner has not established that there is any teaching or suggestion of the specifically claimed *weight* ratio in Hudson.

Recalling that the Examiner asserted his application of Hattori was to teach the claimed weight ratio lacking in Nishimura, and that he only applied Hudson "to reinforce Hattori," and further recalling that the Examiner directed Applicants' attention to Hattori's par. [0006] and [0112] to provide support for his argument of motivation to combine Hattori with Nishimura, Applicants have clearly shown, in the remarks above, that Hattori and Hudson do not (alone or in combination) suffice to cure Nishimura's deficiencies.

Applicants point out that they have considered Nishimura, Hattori, and Hudson *together*, so the Examiner cannot subsequently allege in a form paragraph that

[i]n response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). M.P.E.P. § 707.07(f), form paragraph 7.37.13.

Applicants have considered the combination of Nishimura, Hattori, and Hudson, and have pointed out (by carefully studying each reference) that the combination of references fails to teach or suggest at least Applicants' claimed

...slurry for chemical mechanical polishing, which contains polishing particles comprising first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm, *wherein the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles...* (claims 18 and 23, emphasis added).

Furthermore, the Examiner has not established *prima facie* obviousness at least because the requisite motivation to modify Nishimura, Hattori, and/or Hudson is lacking. Determinations of obviousness must be supported by evidence on the record. *See In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) (finding that the factual determinations central to the issue of patentability, including conclusions of obviousness by the Board, must be supported by “substantial evidence”). Further, the desire to modify a reference must be proved with “substantial evidence” that is a result of a “thorough and searching” factual inquiry. *See In re Lee*, 277 F.3d 1338, 1343-1344 (Fed. Cir. 2002) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52).

In the rejection, the Examiner has not shown that one of ordinary skill in the art, when considering Nishimura, Hattori, and/or Hudson, and not having the benefit of Applicants’ disclosure, would have been motivated to modify any or all of these references in a manner resulting in Applicants’ claimed semiconductor device.

During the interview, the Examiner directed Applicants’ attention to Hattori’s par. [0006] and [0112] to provide support for his argument of motivation to combine Hattori with Nishimura for the purposes of achieving the claimed weight ratio. These allegations are not properly supported and do not show that one of ordinary skill in the art would have modified any of the cited references according to Hattori’s disclosure merely because Hattori teaches “an aqueous dispersion for CMP with an excellent balance between chemical etching and mechanical polishing performance” (Hattori, par. [0112]). This citation has nothing to do with motivating one of ordinary skill in the art to seek out Applicants’ specifically claimed weight ratio to use in combination with Nishimura and/or Hudson. The Examiner provided no evidence, beyond a

generalized citation in Hattori, to attempt to show that the cited references, when combined, would have taught or suggested the claimed weight ratio.

Applicants direct the Examiner's attention to M.P.E.P. § 2143.01, which makes clear that: "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (citations omitted). The Examiner does not show that Nishimura, Hattori, and/or Hudson suggest the desirability of Applicants' claimed weight ratio. Applicants submit that the conclusions in the Final Office Action were not reached based on facts gleaned from Nishimura, Hattori, and/or Hudson and that, instead, teachings of the present application were improperly used to reconstruct the prior art by piling incorrect inference upon incorrect inference. For at least these additional reasons, *prima facie* obviousness has not been established regarding claims 18 and 23.

Applicants have therefore established that Nishimura, Hattori, and/or Hudson do not teach or suggest each and every element of Applicants' independent claims 18 and 23. Therefore, the Examiner's reliance on Nishimura, Hattori, and/or Hudson fails to establish *prima facie* obviousness. Claims 18 and 23 are allowable, and dependent claims 19-22 and 24-37 are also allowable at least by virtue of their respective dependence from allowable base claims 18 or 23. Therefore, the improper 35 U.S.C. § 103(a) rejection should be withdrawn.

**Objection to Claims 22, 24, 29, 31 and 35-37:**

Objected-to claims 22, 24, 29, 31 and 35-37 depend directly or indirectly from base claims 18 and 23. For the reasons presented above, independent claims 18 and 23 are allowable over Nishimura, Hattori, and/or Hudson. Therefore, dependent claims 22, 24, 29, 31 and 35-37 are also allowable, at least by virtue of their respective dependence from allowable base claims 18 or 23. Applicants therefore request withdrawal of the objection.

**Conclusion:**

In view of the foregoing, Applicants request reconsideration of the application and withdrawal of the rejection. Pending claims 18-37 are in condition for allowance, and Applicants request a favorable action.

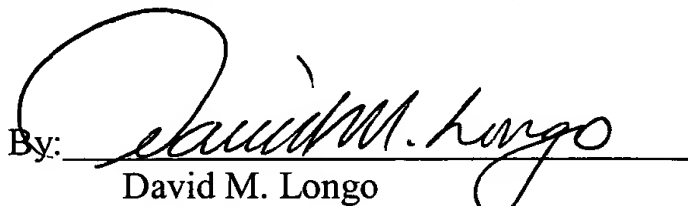
Should the Examiner continue to dispute the patentability of the claims after consideration of this Request for Reconsideration after Final, Applicants encourage the Examiner to contact the undersigned representative by telephone to discuss any remaining issues or to resolve any misunderstandings.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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